Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)
)
Framework for Next Generation 911 Deployment) PS Docket No. 10-255
)
)

To: The Commission

COMMENTS OF SHOTSPOTTER, INC.

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February 28, 2011

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EXECUTIVE SUMMARY

ShotSpotter, Inc. ("ShotSpotter") commends the Federal Communications Commission ("Commission") for initiating this important inquiry into Next Generation 9-1-1 ("NG9-1-1") and recognizing the significance of device-initiated capabilities, such as gunshot sensor technologies, to overall public safety and NG9-1-1. The Commission should ensure that device-initiated capabilities are included in the NG9-1-1 framework.

The ShotSpotter Gunshot Location System® ("ShotSpotter GLS") provides device-initiated automatic alerts that deliver real-time incident and situational intelligence to emergency responders. Founded in 1995, ShotSpotter has deployed its GLS in more than 50 U.S. cities and internationally as well. The ShotSpotter GLS consists of an acoustic sensor network that instantly detects a gunshot and pinpoints the location within 5 to 25 meters. Within seconds, the system transmits the incident information to dispatcher personnel and law enforcement patrol officers, enabling a safer, more rapid and appropriate response by law enforcement.

In some of the most crime-ridden neighborhoods across the country, residents report gunfire via the 9-1-1 system in as few as 25 percent of gunfire incidents. The ShotSpotter GLS remedies this underreporting problem through gunshot detection and automated real-time alerts, thereby increasing the effectiveness of emergency responses and reducing gunfire incidents and violent crime.

Moreover, each gunfire incident (including the audio recording) is saved for subsequent use by investigators, prosecutors and crime analysts. The data is often used to confirm (or refute) witness statements and aid with crime scene reconstruction. Cumulative incident data also reveals gun crime patterns to help law enforcement adapt and target operations.

As demonstrated herein, public safety officials have overwhelmingly found that the ShotSpotter GLS delivers results, leading to faster, more accurate police responses, saving lives, and reducing violent crime. Based on ShotSpotter GLS's real-time alerts, public safety agencies consistently report violent crime reductions of up to 40 percent and an overall reduction in gunfire of between 60 and 80 percent.

The Commission should advance an NG9-1-1 framework that embraces device-initiated, automatic alerting technologies like the ShotSpotter GLS.

Today, ShotSpotter is working with Intrado and other NG9-1-1 vendors and service providers to ensure the ShotSpotter GLS is fully and seamlessly interoperable with next generation IP-based emergency response networks.

ShotSpotter urges the Commission to continue to advance NG9-1-1 by adopting a broad definition of NG9-1-1 that includes sensor-based capabilities; identifying state and local laws or regulations that may inhibit NG9-1-1 and the implementation of device-initiated alerts; and facilitating and coordinating the continued dialog among NG9-1-1 stakeholders.

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To: The Commission

COMMENTS OF SHOTSPOTTER, INC.

ShotSpotter, Inc. ("ShotSpotter") commends the Federal Communications Commission ("Commission") for initiating this important inquiry into Next Generation 9-1-1 ("NG9-1-1") and in particular, for recognizing the significance of device-initiated capabilities such as gunshot sensors in the context of public safety and NG9-1-1.[1] NG9-1-1 solutions will significantly complement and bridge the gap between today's 9-1-1 systems and the capabilities that advanced technologies can and currently do bring to emergency response communications and the efforts of first responders.

ShotSpotter submits these comments to reinforce one functionality that should be incorporated into NG9-1-1: device-initiated services that deliver real-time incident alerts providing situational intelligence to emergency responders through the NG9-1-1 network(s). The ShotSpotter Gunshot Location System® ("ShotSpotter GLS") is one such example. The ShotSpotter GLS deploys a network of acoustic sensors that pinpoints the location of shots fired – within 5 to 25 meters – and then transmits this information within seconds to dispatcher

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[1] *Framework for Next Generation 911 Deployment*, Notice of Inquiry, 25 FCC Rcd 17869 (2010) ("*NOI*").

personnel and law enforcement patrol officers so that they may respond safely, rapidly, and appropriately. Founded in 1995, ShotSpotter has deployed its GLS in more than 50 U.S. cities and internationally as well. The Commission should ensure that such device-initiated capabilities are included in the NG9-1-1 framework.

I.   INTRODUCTION

In some cities today, residents report gunfire via the 9-1-1 system in as few as 25 percent of gunshot incidents.[2] This under-reporting commonly occurs in some of the most dangerous neighborhoods where residents can become desensitized to the sound of gunshots.[3] When incidents are not reported, there is by definition no response from local law enforcement, creating a public perception that law enforcement is unresponsive. Even when residents do call 9-1-1, the reports are often imprecise (*e.g.*, with regard to the location of shots fired and the number of rounds fired) often yielding a similar result – a public perception that law enforcement is unresponsive.[4] As described below, the ShotSpotter GLS remedies these gaps with accurate real-time information that enables law enforcement to respond quickly and precisely, resulting in

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[2] *See* Lorraine Green Mazerolle et al., *Random Gunfire Problems and Gunshot Detection Systems*, National Institute for Justice – Research in Brief (Dec. 1999), http://www.ncjrs.gov/pdffiles1/nij/179274.pdf ("Gunshot detection systems are likely to reveal rather high citizen under-reporting rates of random gunfire problems (23 percent of incidents are reported).").

[3] *See, e.g.*, *ShotSpotter Helps Police Put Gunfire in the Crosshairs*, BIRMINGHAM NEWS, Feb. 26, 2009 ("[S]ome neighborhoods may have become desensitized to the sound of gunfire."); Katherine Tam, *Richmond to Expand Gunshot-Detection System*, CONTRA COSTA TIMES, Sept. 16, 2009 ("There are a number of neighborhoods that are desensitized to gunfire." (quotation omitted)).

[4] *See, e.g.*, Ethan Watters, *Shot Spotter*, WIRED (Apr. 2007), *available at* http://www.wired.com/wired/archive/15.04/shotspotter.html ("Even if someone does report hearing gunfire, the chance of identifying the location and catching the perpetrator is remote. Echoing off walls and masked by other noises, the sound's origin can be difficult to place.").

substantial reductions in gunfire and violent crime, as well as improved public perception of local law enforcement.

By way of example, on February, 27, 2011 – the night prior to the filing of these comments – a ShotSpotter GLS alert led to the arrest of an armed individual in Boston. Around 11:00pm, officers responded to an address location identified by a ShotSpotter GLS alert. On arrival and within minutes of the ShotSpotter alert, officers observed three individuals walking away from the area. As officers approached the group, one individual broke away from the group and crossed the street. Officers stopped all three individuals. The individual that had broken away told officers that it was fireworks when he was asked if he had heard any gunshots. Officers then asked this male if they could perform a pat frisk of him. As officers approached the male suspect to conduct the frisk, the suspect stated to officers, "To be honest, I have a gun on me!" The officers quickly secured the suspect and pat frisked him, leading to the recovery of a loaded semi-automatic from his pocket. The suspect was arrested and charged with unlawful possession of a firearm, and unlawful possession of ammunition.[5]

ShotSpotter urges the Commission to advance an NG9-1-1 framework that embraces automatic alerting technologies so that more communities can benefit from device-initiated solutions like the ShotSpotter GLS.

As the *NOI* observes, broadband, IP-based technology "creates the potential for our 9-1-1 system to accommodate a full range of specialized devices and functionalities tailored to particular emergency scenarios."[6] It seeks comment on "device-initiated services for emergency

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[5] Boston Police Department, *ShotSpotter Activation Results in Recovery of Firearm and Arrest of Suspect* (Feb. 28, 2010), http://www.bpdnews.com/2011/02/28/shotspotter-activation-results-in-recovery-of-firearm-and-arrest-of-suspect/.

[6] *NOI*, 25 FCC Rcd at 17880 ¶ 29.

communications," where "automatically triggered devices" place emergency requests for assistance.[7] The comments below offer compelling evidence in support of this approach, demonstrating that acoustic sensor technology can play a critical role in advancing emergency response communications and public safety.

As Chairman Genachowski recognized, "Broadband-enabled, Next-Generation 9-1-1 will revolutionize emergency response . . . [and] allow emergency calls to be placed by devices, rather than human beings."[8] He noted further, "[t]he benefits are clear, as is the need for action."[9] ShotSpotter urges the Commission to use this proceeding to articulate a broad vision of NG9-1-1 that embraces – and advances – device-initiated communications.

II.   SHOTSPOTTER'S GUNSHOT LOCATION SYSTEM AND OTHER DEVICE-INITIATED ALERTS INCREASE THE EFFECTIVENESS OF EMERGENCY RESPONSE COMMUNICATIONS AND LAW ENFORCEMENT

ShotSpotter remedies the problems of unreported and inaccurate gunfire information, enabling law enforcement agencies to respond in a timely, accurate, and appropriate fashion.

DIAGRAM 1: SHOTSPOTTER GLS RESPONSE CAPABILITIES

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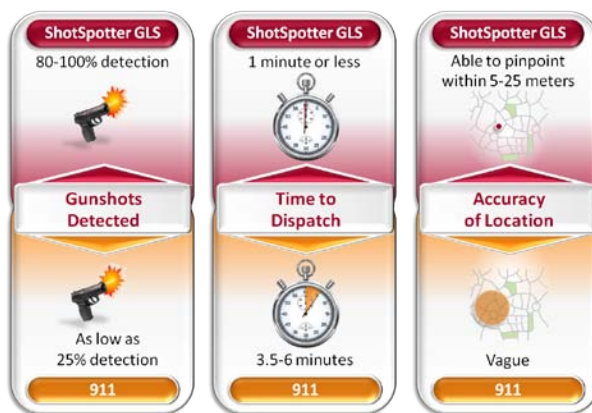
[7] *Id.* at 17889 ¶ 58.

[8] Statement of Chairman Julius Genachowski, *attached to NOI*.

[9] *Id.*

Within seconds of a shooting, a ShotSpotter GLS transmits a real-time alert to dispatchers and/or patrol officers in the area, pinpointing the gunfire location within 5 to 25 meters. In some situations, a ShotSpotter GLS can enable an officer to reach the scene of a shooting within a minute.[10]

A. ShotSpotter GLS Is a Proven Technology Deployed Domestically and Internationally

Nature of the Service. The ShotSpotter GLS instantly detects and accurately locates the origin of gunfire. ShotSpotter guarantees the system will determine the location of outdoor gunfire to within 25 meters (the location is provided as a latitude-longitude coordinate that can indicate where an incident occurred within a parcel; the street address of the parcel is also provided). In practice, the system often determines gunfire locations within a few meters of where the shot was fired. A real time alert is then sent directly to dispatchers and/or patrol officers and crime analysts, providing them with incident data, including gunshot location, the number of rounds fired, and real time audio clips that often enable dispatch personnel and responders to estimate the number of shooters. With real time alerts, law enforcement agencies can respond more effectively and appropriately to gunfire in their communities.

In addition, each gunfire incident (including the audio recording) is saved in a database for subsequent use by investigators, prosecutors, and crime analysts. The data produced by ShotSpotter GLS is often used to confirm witness statements and aid with crime scene reconstruction by fixing the time and location of the gunshots; data from a ShotSpotter GLS can also be used to refute false testimony. Indeed, ShotSpotter GLS data often proves itself invaluable for solving crimes that otherwise might remain unsolved. Further, analysis of

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[10] *See* Watters, *supra* note 4.

cumulative gunfire incident data reveals gun crime patterns, trends, and hot spots and is used to help adapt law enforcement operations to better target such gun-related crime.

ShotSpotter GLS is designed to easily integrate with other first responder systems such as NG9-1-1, commonly used operating displays, video surveillance management systems, and reverse 9-1-1 systems. Full integration of ShotSpotter GLS into a PSAP's current and future information systems helps ensure 9-1-1 call takers and supervisors can more readily associate ShotSpotter information with incoming incident or caller information to make quicker and more informed decisions. In addition, the interoperable nature of ShotSpotter GLS enables alerts to be rapidly shared across jurisdictions, allowing for more coordinated responses.

History. ShotSpotter was founded in 1995 by a former physics professor committed to countering the rising violence in East Palo Alto, California. The technology, based on research in seismic acoustical sensors, was adapted to solve the problem of detecting and locating gunshots. Redwood City, California purchased the first ShotSpotter system in the mid-1990s, and after other successful deployments, the FBI approached ShotSpotter in 2003 to help locate the sniper terrorizing motorists along a stretch of Ohio highway. ShotSpotter deployed its gunfire location system along that stretch of highway and pinpointed the origin of subsequent shootings, leading to the arrest of the "Ohio sniper."[11] This high profile success helped catalyze ShotSpotter's continued growth.

Deployments. Today, ShotSpotter GLS is deployed in more than 50 U.S. cities and counties, including Birmingham, Boston, Chicago, Los Angeles, Rochester (NY), San Francisco, Springfield (MA), and Washington DC, to name just a few. Internationally, ShotSpotter systems are deployed in the United Kingdom and Brazil, among other countries. In total, ShotSpotter

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[11] Scott Duke Harris, *Shots Fired!*, SAN JOSE MERCURY NEWS, June 22, 2008.

systems monitor over 150 square miles, protecting a population of over one million in some the

most dangerous neighborhoods in this country and around the world.[12] A complete list of

ShotSpotter's domestic and international deployments is attached as Exhibit 1. In addition, the

U.S. Army has deployed a special battlefield version in Iraq to help neutralize insurgent sniper

fire.[13]

Description of the Technology. To determine a gunshot's location, ShotSpotter GLS

relies on triangulation based on the sound of gunfire discharges reaching different sensors in the

system at different times. The system consists of a network of small auditory sensors that are

either wired or connected wirelessly to a ShotSpotter central server. To avoid false alarms, the

system contains digital filters that allow it to recognize gunfire and ignore other loud sounds. A

typical deployment consists of approximately 16 sensors per square mile. Each sensor contains

an internal microphone array providing 360-degree coverage, making it possible to determine the

direction from which a sound came. Each sensor also includes a GPS receiver that provides the

location of the sensor.

As illustrated below in Diagram 2, when a gun is fired, sound waves travel outward in all

directions at a uniform speed. Each sensor receives the sound waves at a slightly different time,

based on GPS synchronization, and sends this information along with a recording of the sound to

the central server. The server then calculates the location based on the location of each sensor

and a comparison of the times when the sound wave reached each sensor. To increase the

accuracy of the location calculation, the software also takes into account environmental factors,
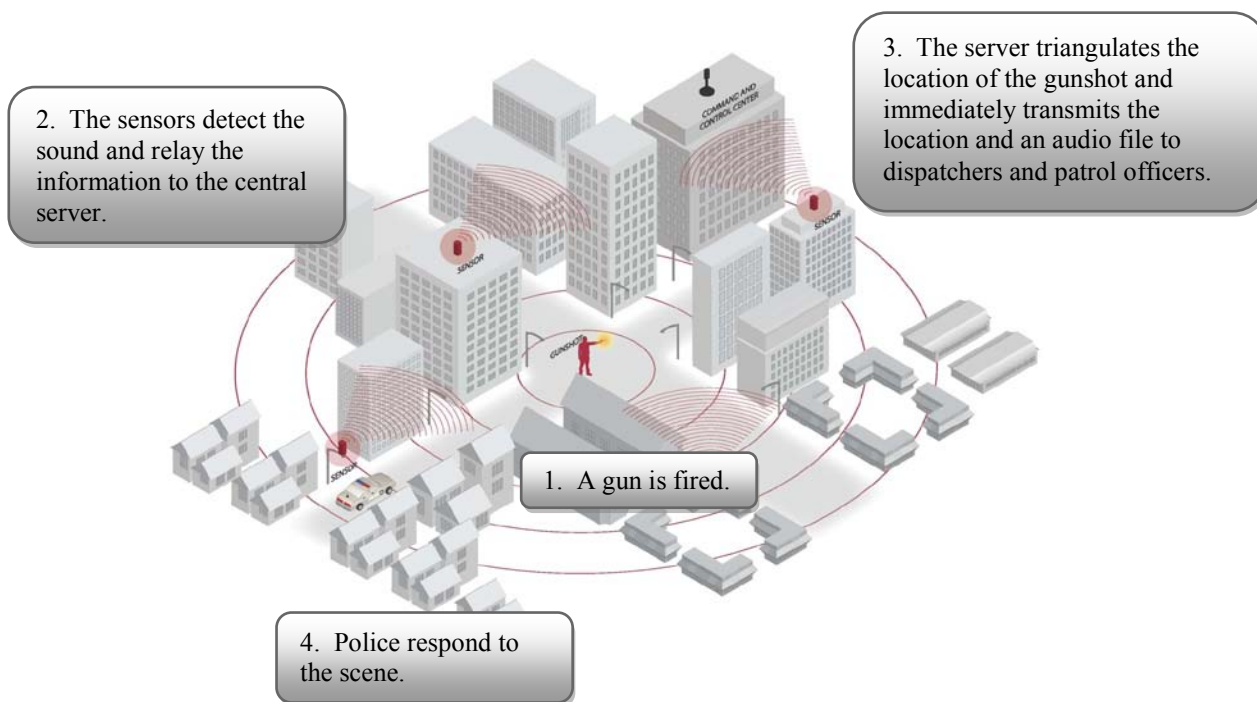
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[12] The size of each deployment varies, ranging from 0.5 to 16 square miles.

[13] Watters, *supra* note 4; Chris Morrison, *A Sonic Bullet for Fighting Crime: Gunshot Monitoring Technology Scores Big with Local Police*, FORTUNE SMALL BUSINESS (Nov. 2009).

such as air temperature, humidity, and wind speed and direction that may affect the calculation.

This entire process is completed within seconds.

DIAGRAM 2: DESCRIPTION OF THE SHOTSPOTTER TECHNOLOGY

2. The sensors detect the sound and relay the information to the central server.

3. The server triangulates the location of the gunshot and immediately transmits the location and an audio file to dispatchers and patrol officers.

1. A gun is fired.

4. Police respond to the scene.

The ShotSpotter GLS then transmits the incident information that includes audio clips

from sensors that heard and record the sound of the shooting to dispatchers and patrol officers in

the area, enabling faster, safer, more precise responses. In some deployments, agencies interface

their ShotSpotter GLS with their video surveillance system, enabling automatic and immediate

"slewing" of cameras toward the location of the incident plus surrounding egress routes. This

greatly increases the likelihood that the surveillance cameras will catch sight of suspects,

victims, witnesses, and/or license plates.[14]

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[14] *See, e.g.*, Cara Buckley, *High-Tech 'Ears' Listen for Shots*, N.Y. TIMES, Nov. 20, 2009 (integrating ShotSpotter with surveillance cameras in East Orange, NJ); Chris Delaney, Senior Crime Research Specialist Rochester Police Department, *ShotSpotter Contributes to Violence Reduction Strategy in Rochester*, GAZETTE – ROYAL CANADIAN MOUNTED POLICE, at 19 (Nov. 2,

B. **The ShotSpotter GLS Delivers Results, Leading to Faster, More Accurate Police Responses, Saving Lives and Reducing Violent Crime**

Public safety agencies consistently report violent crime reductions of up to 40 percent and overall gunfire reduction between 60 and 80 percent based on ShotSpotter GLS's real-time alerts that enable more targeted and responsive policing.[15] Testimonials from public safety officials make clear the difference that ShotSpotter GLS has made in their jurisdictions:

Faster, More Accurate Response –

> "*The ShotSpotter System functioned exactly as it was supposed to and enabled us to get to the scene much more quickly than would have happened otherwise.*" Sgt. Terry Buchanan, Rochester Police Department, Rochester, New York.

> "*When you roll on a ShotSpotter call, you're going to be raised up and ready.*" Officer Abdullah Dadgar, Oakland Police Department, Oakland, California.

> "*We get there sooner, which means we're more likely to catch the person responsible. For an injured person, it can be the difference between living and dying.*" Former Chief of Police Charles H. Ramsey, Metropolitan Police Department, Washington, DC.

Saving Lives –

> "*We've had numerous cases in which we've found victims laying there bleeding from gunshot wounds. If we wouldn't have been notified via the ShotSpotter system, there's a good chance some of these people would've died.*" Sheriff Lee Baca, Los Angeles County Sheriff's Department, Los Angeles County, California.

> "*We had one instance where a man was shot at point blank range at a house party. ShotSpotter picked it up, logged it and told police where the shot was fired and authorities responded within minutes of it occurring and took the necessary steps to get the man to the hospital. Doctors said had he arrived at the hospital a few minutes later, he may not have survived.*" Commissioner Lawrence Mulvey, Nassau County Police Department, Nassau County, New York.

2010), *available at* http://www.rcmp-grc.gc.ca/gazette/vol72n2/vol71n2-eng.pdf (integrating ShotSpotter with surveillance cameras in Rochester, NY).

[15] *See Use of Crime-Fighting ShotSpotter Technology to be Expanded in Nassau County*, HOMELAND SECURITY NEWSWIRE (Sept. 7, 2010), *available at* http://homelandsecuritynewswire.com/use-crime-fighting-shotspotter-technology-be-expanded-nassau-county. *See also* David Ono, *L.A. County Sheriff's Deputies Detect Crime as It Happens*, KABC-TV Los Angeles, Cal. (Jan. 28, 2009), *available at* http://abclocal.go.com/kabc/story?section=news/local/los_angeles&id=6630398 (attributing much of the 40% reduction in murders to ShotSpotter).

Decreasing Violence –

> *"The city of Rochester has seen a 43 percent reduction in gunfire since the system went live in July of 2006. Within 48 hours of turning the system on we had our first felony arrest."* Mike Bialaszewski, Rochester Police Department, Rochester, New York.

> *"Since the very first installation, we've seen a 75 percent decrease in gunfire in our jurisdiction."* Former Chief of Police Carlos G. Bolanos, Redwood City Police Department, Redwood City, California.

> *"We saw, in the first 30 days, a 30 percent drop in complaints of shots fired."* Gary Schiff, Minneapolis City Council Member, Ward 9, Minneapolis, Minnesota.

Providing Actionable Data for Investigators and Otherwise Unobtainable Forensic Evidence –

> *"Evidence from the ShotSpotter system and the city's public safety video cameras has been used in 'hundreds' of cases since it was first installed four years ago, often corroborating other bits of evidence or assisting investigators with solid proof of people's whereabouts."* Deputy Chief Rob Allen, Minneapolis Police Department, Minneapolis, Minnesota.

> *"[ShotSpotter] was one of two crucial elements to providing probable cause [for arrest]."* Chief of Police Gerald Cliff, Saginaw Police Department, Saginaw, Michigan.

> *"Physical evidence, unlike people, never lies. People sometimes lie or get things wrong, but when you are talking about physical evidence, especially scientific evidence as captured by the ShotSpotter GLS, there is no lie. It bolstered all of the evidence: eyewitness testimony and physical evidence found at the scene."* Deputy County Attorney Susie Charbel, Maricopa County Attorney's Office, Homicide Bureau, Maricopa County, Arizona.

C. ShotSpotter GLS is Integrating with NG9-1-1 Solutions

ShotSpotter is working with other NG9-1-1 vendors and service providers that are developing and deploying emergency response IP communication networks to make the ShotSpotter GLS fully and seamlessly interoperable with those networks. Specifically, ShotSpotter and 9-1-1 technology solutions provider Intrado recently announced that ShotSpotter GLS has been certified compliant to provide gunfire location capabilities as part of Intrado's

NG9-1-1 offering.[16] Under this partnership, ShotSpotter systems deliver accurate real-time situational intelligence to 9-1-1 centers and first responders over Intrado's secure and reliable "A911™" emergency services IP network. Working together, the two companies will enable public safety agencies to more easily incorporate real-time, sensor-generated alerts and accumulated incident data as a part of their operational process.

III. THE COMMISSION SHOULD ENSURE THAT NG9-1-1 INCORPORATES DEVICE-INITIATED EMERGENCY RESPONSE REQUESTS

ShotSpotter commends the Commission for initiating this proceeding and urges the agency to continue to advance a robust NG9-1-1 framework by taking the following steps: adopt a broad definition of NG9-1-1 and continue to express support for sensor and surveillance capabilities, including acoustic sensing capabilities, that are interfaced with NG9-1-1 networks; identify state laws and local ordinances that may inhibit NG9-1-1 development; and provide leadership for an ongoing NG9-1-1 dialogue among key stakeholders.

A. The Commission Should Develop a Broad Definition of NG9-1-1 Capabilities that Embraces Device-Initiated Emergency Response Requests

The Commission can take an important step here by advancing an NG9-1-1 framework that embraces the capabilities of device-initiated emergency response requests, including sensor-based emergency communications. The ShotSpotter GLS deployments described above demonstrate how acoustic sensor-based emergency detection and corresponding real-time communications do in fact play an integral and significant role in emergency response and in the reduction of violent crime today. The Commission should continue to find ways to express support for such device-initiated capabilities.

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[16] Press Release, Intrado, Intrado and ShotSpotter Join Forces to Provide Real Time Violent Crime Information to Public Safety (Jan. 18, 2011), http://www.intrado.com/main/press/shotspotter/.

B.   The Commission Should Lead an Effort to Ensure That Existing Laws, Regulations, and Tariffs Do Not Inhibit the Incorporation of Device-Initiated Emergency Response Requests

The National E9-1-1 Implementation Coordination Office has already recognized that "rules concerning which devices and services may connect to 9-1-1" may need updated to facilitate the migration to NG9-1-1.[17] The *NOI* in turn seeks to understand how "state laws and local ordinances that currently exclude non-voice based communications, automated 9-1-1 access, and sensors affect the deployment of NG9-1-1."[18] Given the proven benefits of device-initiated alerts from sensors and surveillance systems, ShotSpotter urges the Commission to lead an effort to identify and modify existing laws, regulations, and tariffs that either directly or indirectly inhibit device-initiated emergency response requests.

C.   The Commission Should Facilitate and Coordinate the Continued Dialog Among NG9-1-1 Stakeholders

The Commission should follow up the *NOI* with a continued commitment to engage stakeholders and serve a coordinating function as the NG9-1-1 ecosystem advances and develops. Specifically, the Commission should consider forming an advisory committee that brings together representatives from local and state public safety agencies and industry representatives including 9-1-1 vendors and application providers, as well wireline and wireless network operators, to advance the NG9-1-1 framework.

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[17] National E9-1-1 Implementation Coordination Office, *A National Plan for Migrating to IP-Enabled 9-1-1 Systems*, 5-10 (Sept. 2009).

[18] *NOI*, 25 FCC Rcd at 17892 ¶ 69.

IV. CONCLUSION

For the reasons discussed above, the Commission should ensure NG9-1-1 incorporates device-initiated emergency response requests.

Respectfully submitted,

SHOTSPOTTER, INC.

By: */s/ Ralph A. Clark*

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February 28, 2011

EXHIBIT 1

ShotSpotter
Gunshot Location System®

UNITED STATES LOCATIONS
Baltimore, MD - Johns Hopkins University (2009)
Baton Rouge, LA (2007)
Bell Gardens, CA (2009)
Bellwood, IL (2007)
Beloit, WI (2008)
Birmingham, AL (2007)
Boston, MA (2007)
Brockton, MA (2009)
Camden, NJ (2010)
Charleston, SC (2003)
Chicago, IL (2007)
Dallas, TX (2009)
East Orange, NJ (2006)
East Palo Alto, CA (2007)
FBI (two systems) (2007)
Gary, IN (2005, four expansions)
Glendale, AZ (2002)
Harrisburg, PA (2009)
Irvington, NJ (2008)
Jefferson Parish, LA (2010)
Los Angeles County, CA (2007, two systems, two expansions)
Milwaukee, WI (2010)
Minneapolis, MN (2006)
Montgomery, AL (2009)
Mount Vernon, NY (2009)
Nassau County, NY (2008)
New Haven, CT (2008)Pana
New Bedford, MA (2011)
Newark, NJ (2008)
NLECTC (2007)
North Charleston, SC (2004)
Oakland, CA (2006)
Paterson, NJ (2007)
Prince George's County, MD (2009, one expansion)
Redwood City, CA (1996, one expansion)
Richmond, CA (2009, one expansion)
Riviera Beach, FL (2009)
Rochester, NY (2006, two expansions)
Saginaw, MI (2008, one expansion)
San Francisco, CA (2007, three expansions)
San Pablo, CA (2010)
South Gate, CA (2008)
Springfield, MA (2007, one expansion)
St. Louis, MO (2008)
Trenton, NJ (2009)
Troy, NY (2008)
Washington D.C. (2006, two expansions)
Yonkers, NY (2009)
York, PA (2007)
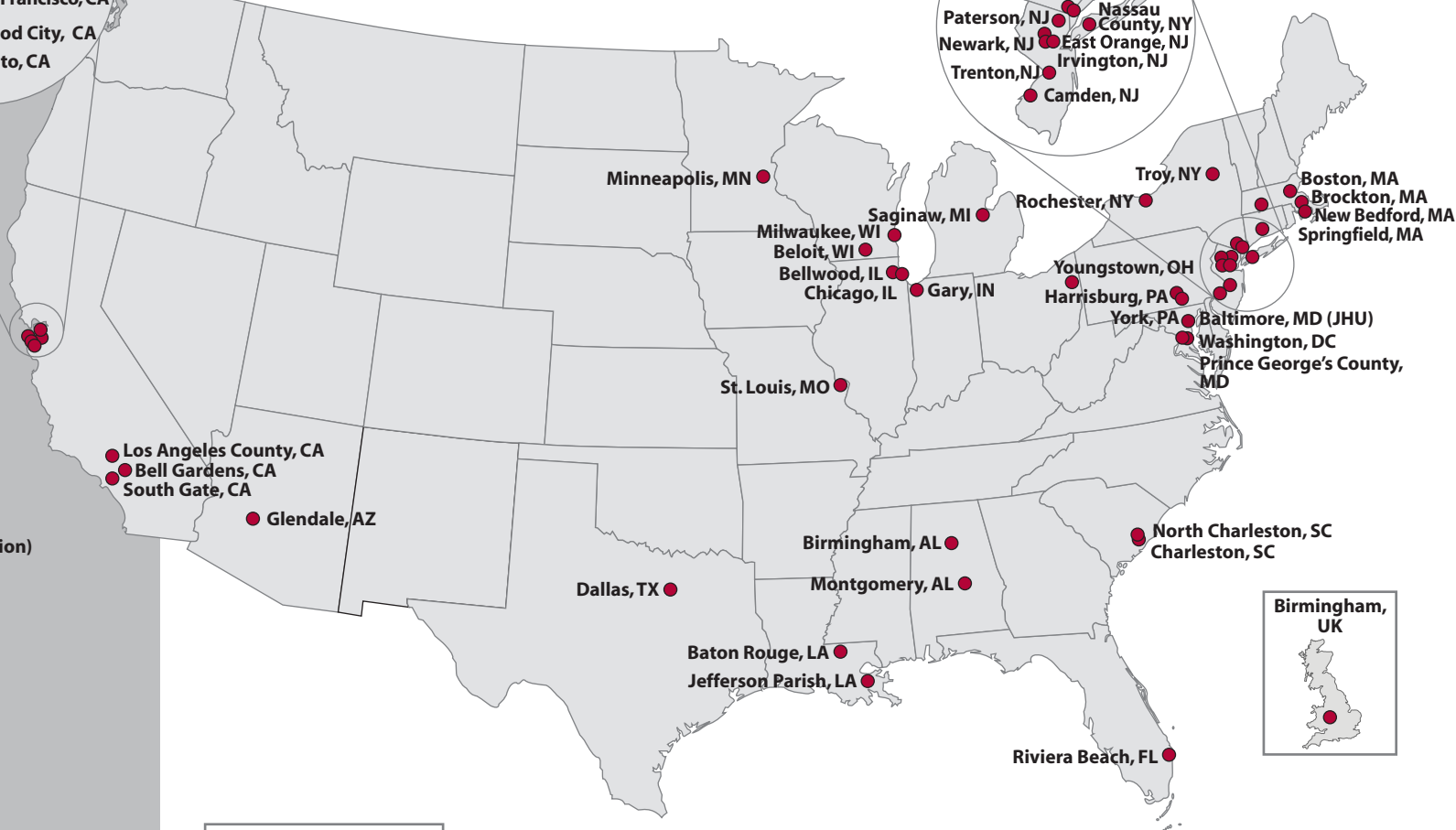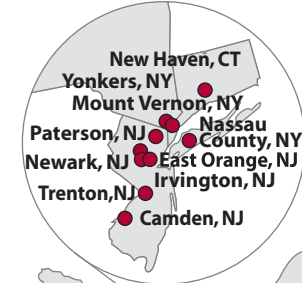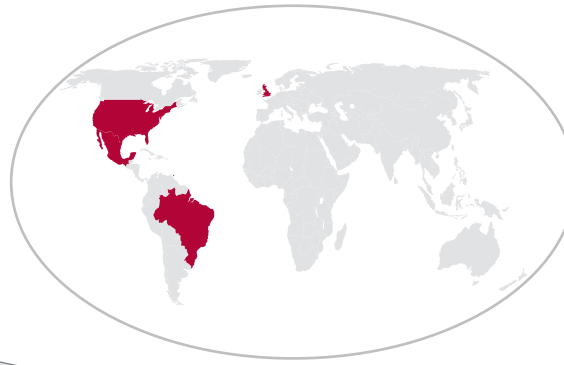Youngstown, OH (2009)
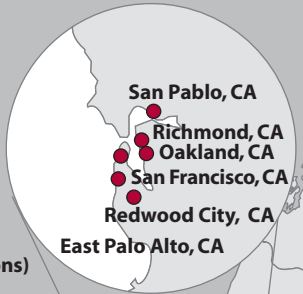
INTERNATIONAL LOCATIONS
Birmingham, UK (2010)
Guajuviras, Canoas, RS, Brazil (2010)
Rio de Janeiro, Brazil (2010)
Panama (2010)

Map callouts — California inset:
San Pablo, CA
Richmond, CA
Oakland, CA
San Francisco, CA
Redwood City, CA
East Palo Alto, CA

Northeast inset:
New Haven, CT
Yonkers, NY
Mount Vernon, NY
Nassau County, NY
Paterson, NJ
Newark, NJ
East Orange, NJ
Irvington, NJ
Trenton, NJ
Camden, NJ

US map labels:
Minneapolis, MN
Saginaw, MI
Milwaukee, WI
Beloit, WI
Bellwood, IL
Chicago, IL
Gary, IN
Troy, NY
Rochester, NY
Boston, MA
Brockton, MA
New Bedford, MA
Springfield, MA
Youngstown, OH
Harrisburg, PA
York, PA
Baltimore, MD (JHU)
Washington, DC
Prince George's County, MD
St. Louis, MO
Los Angeles County, CA
Bell Gardens, CA
South Gate, CA
Glendale, AZ
Birmingham, AL
Montgomery, AL
North Charleston, SC
Charleston, SC
Dallas, TX
Baton Rouge, LA
Jefferson Parish, LA
Riviera Beach, FL

Birmingham, UK

Rio de Janeiro, Brazil
Guajuviras, Canoas, Brazil

Country of Panama